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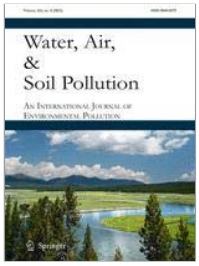
Atmospheric Deposition of Trace Metals at Three Sites Near the Great Lakes

Abstract

The concentrations of vanadium (V), chromium (Cr), manganese (Mn), nickel (Ni), copper (Cu), zinc (Zn), arsenic (As), selenium (Se), cadmium (Cd), and lead (Pb) in precipitation and on airborne particles were measured at three Integrated Atmospheric Deposition Network (IADN) monitoring stations on Lakes Superior, Michigan and Erie during 1993 and 1994. These data were used to estimate annual wet and dry deposition fluxes at these sites. In most cases, both wet and dry deposition make an important contribution to the total atmospheric flux of trace metals. Total (wet + dry) annual loadings of Zn and Cr are higher at the Lake Erie site than at the Lake Michigan and Lake Superior sites. Atmospheric loadings of the other metals are similar at all three sites. Wet deposition of metals is more closely related to precipitation amount than to the concentration of metals in the precipitation. Dry deposition fluxes are controlled by the concentration of trace metals on large particles. Total particle mass concentrations are higher during the summer and fall at the Lake Erie site, however no seasonal trends in total particle mass at the other sites or trace metals at any of the sites were detected. The total atmospheric loadings calculated in this work are in agreement with other estimates of metals deposition to the Great Lakes.



Related Content

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